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New distributional record of *Photoscotosia miniosata* Walker, 1862 (Geometridae: Larentiinae) from the Kashmir Valley-Pir Panjal Range, Inner Himalayas, India

Muzafar Riyaz

ABSTRACT

Photoscotosia miniosata (Walker, 1862) is a moth that belongs to the subfamily Larentiinae and family Geometridae in the order Lepidoptera. Walker firstly described this species in 1862. The species mostly occur in the temperate regions of Asia and the distribution ranges from Pakistan, India, Nepal, China, Taiwan and the Philippines. In India, it is widely distributed alongside the Himalayan belt of Kashmir (present study) to Himachal Pradesh, Uttarakhand and Arunachal Pradesh. The present study communicates a new distributional record of *P. miniosata* from the Inner Himalayan region of Kashmir valley, India with nomenclature, taxonomical description, distribution and photographs provided for the first time from the region.

Keywords: *Photoscotosia miniosata*; Kashmir valley; Geometridae; taxonomical distribution

1. INTRODUCTION

Geometridae is a well-known family of moths that belong to the superfamily Geometroidea in the order Lepidoptera. Larvae or inchworms of the Geometer moths move in a unique looping fashion that appears to “measure the earth” which is the reason they are tabbed as Geometer moths (*geo*=the earth, and *metron*=measure) derived from Ancient Greek (Heppner, 2008). With around 23000 described species all around the world and over 1400 species from 6 subfamilies indigenous to North America alone, Family Geometridae makes up one of the largest families in Lepidoptera (Ferguson, 2008). In India, the family Geometridae constitute the second largest family of moths with around 2043 species describes so far from India (Sondhi et al. 2020; Dey et al. 2021).

With more than 6200 described species, Subfamily Larentiinae is the second-largest subfamily of moths in the family Geometridae (Scoble & Hausmann, 2007; Hausmann & Viidalepp, 2012). Moths that belong to the

subfamily Larentiinae are small to medium-sized with wing pattern that is sometimes inconspicuous with several twisting transverse lines. Larentiinae moths mostly occur in temperate regions; however, the biodiversity of these moths is increasing towards the poles and altitudinal tropics (Ounap et al., 2016).

During insect explorations in the Kashmir Himalayas, a few specimens belonging to different families were collected in the Tehsil Herman of District Shopian Kashmir (Fig. 1). Based on a critical study of the specimens and expert opinions received among the collected species, the specimen *P. miniosata* was collected for the first time from the Northwestern Himalayas, Kashmir valley, India. The present study hereby reports this species as an addition to the fauna of Jammu and Kashmir Union Territory, India. A brief description along with mounted specimen and live photograph has been provided to facilitate easy identification of this taxon.

2. SPECIES ACCOUNT

Order: Lepidoptera

Superfamily: Geometroidea

Family: Geometridae Stephens, 1829

Subfamily: Larentiinae Duponchel, 1845

Genus: *Photoscotosia* Warren, 1888

Species: *P. miniosata* Walker, 1862

Type species: *Scotosia miniosata* Walker, 1862, List. Lep. Ins. B.M, 25:1354

Distribution

India: Uttarakhand, Himachal Pradesh, Sikkim, West Bengal, Punjab, Arunachal Pradesh (Sanyal et al., 2013; Chandra et al., 2019)

Global: Pakistan, China, and Taiwan (*P. miniosata* Walker, 1862 in GBIF Secretariat, 2021), Philippines (Kemal et al., 2019).



Figure 1. Distribution of the *P. miniosata* and map of the collection site accessed in the present study (Source: Google Maps, GBIF.org 2022)

Active Period: April to October

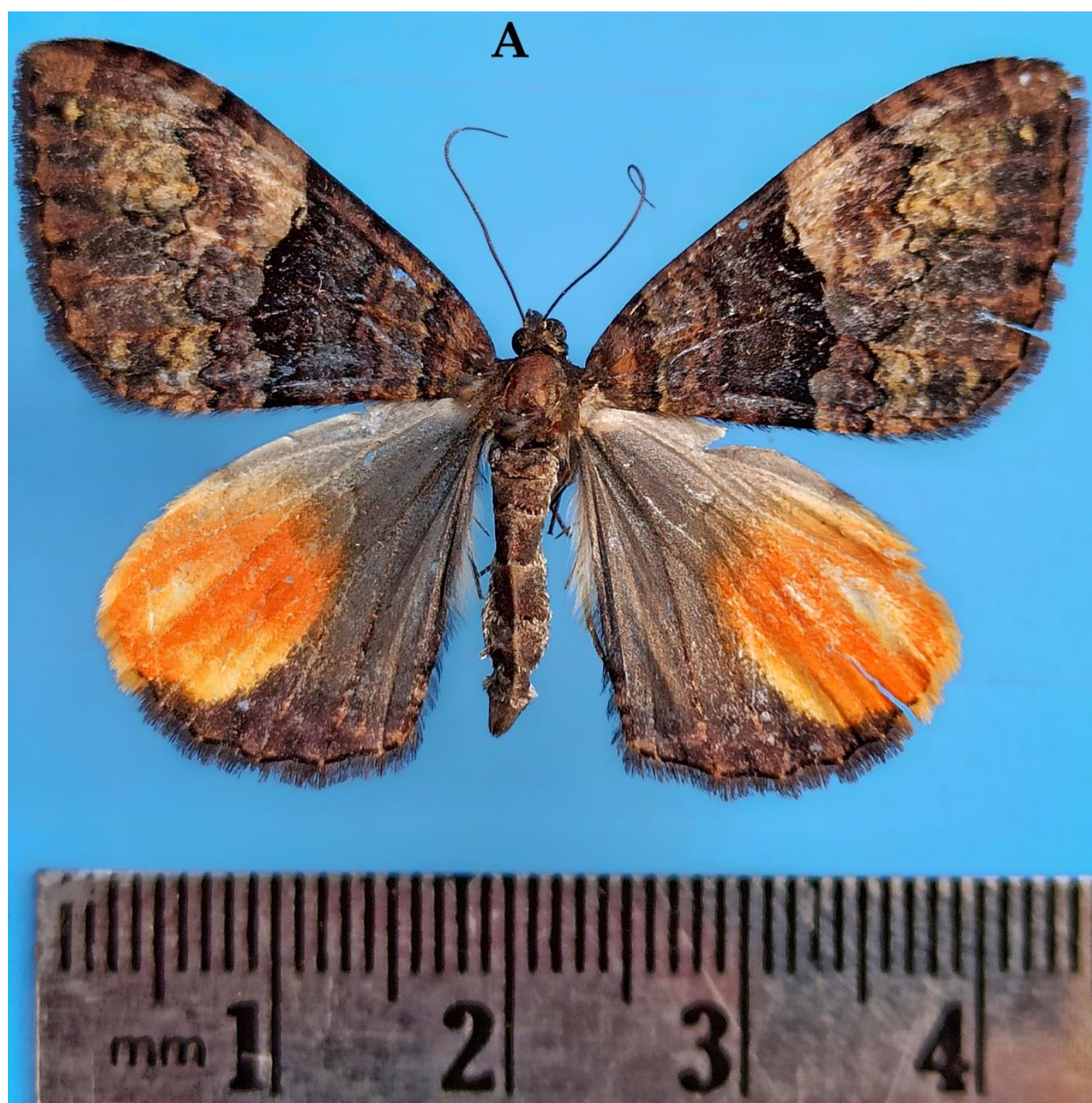
Habitat: The species is mostly present in the middle-altitude forest type ecosystems, however in the present study; the species were collected near the agricultural field.

Specimen examined

2 ♀, INDIA, Jammu and Kashmir, District Shopian, Tehsil Herman, 33.7050N, 74.9400E, 1,596m, 19.10.2021, Muzafar Riyaz, Voucher specimen (ERIB-KMR-274).

Species description

P. miniosata (Fig 2. A-B). The forewing length of this species is about 24 mm, and the wingspan is about 41-48 mm. Antennae are filamentous, and the males are thicker and the head and body are dark brown. Forewing with 3 black wavy stripes, with brown distribution between the stripes, the third row of stripes to the outer edge of gray-green, with inconspicuous green longitudinal stripes between the veins. The stripes are segmented, the base is brown, the front midline to the midline changes from olive green to dark, the midline to the rear midline is ochre, and the rear midline to the outer edge is dark olive green. The main distinguishing feature of the *Photoscotosia miniosata* is the large orange spot on the hindwing, and the front edge of the male is significantly narrower than that of the female, while as the *Photoscotosia insularis* is that the same area of the wing body is yellow. In addition, it is dark gray-brown, and the front edge of the male is significantly narrower than that of the female.



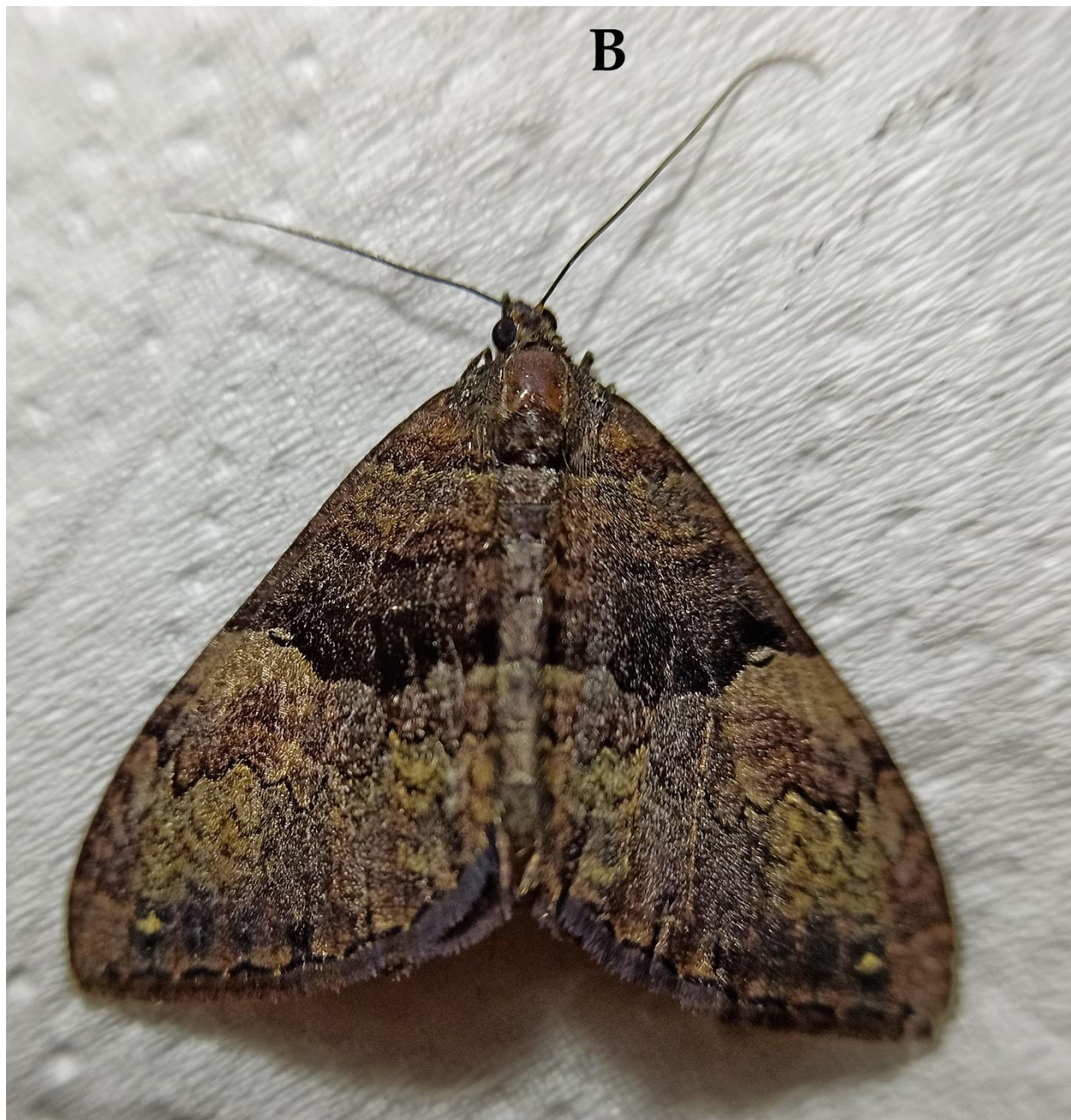


Figure 2. A. mounted specimen of *P. minesota* ♀ B. Live photograph of the specimen (Mounted and Photographed by Muzafar Riyaz)

3. CONCLUSION

Kashmir valley is located at the foothills of Pir Panjal mountain range in the Inner Himalayan belt of India. The region is one of the major biodiversity hotspots of India with diverse flora and fauna (Riyaz and Reshi, 2021). The revision of the insects especially the moths in the region has been not been well documented in the recent past besides aided by some old checklists from British India and authors of the different parts of India as well (Riyaz, 2022). A high elevation is been observed in the endangerment and extinction of both flora and fauna in the present millennium and the introduction of species is contributing to a major threat to biodiversity. With these short notes and mini-revisions of the plant species, many young researchers will come forward to travel around the unexplored areas of the Kashmir Himalayas as new many species await discovery.

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Ethical approval

Photoscotosia miniosata Walker, 1862 (Geometridae: Larentiinae) was observed from the Kashmir Valley-Pir Panjal Range, Inner Himalayas, India. The ethical guidelines are followed in the study for sample collection & identification.

Funding

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Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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